

CONSTRUCTION PROGRESS SCHEDULES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. General.
- B. Scheduling format.
- C. Submittals.
- D. Gantt Charts.
- E. Four-Week Work Plan.
- F. Review, updates and revisions.
- G. Recovery Schedule.
- H. Time Impact Evaluation.
- I. Requests for time extensions.

1.02 MEASUREMENT AND PAYMENT

- A. Separate measurement or payment will not be made for work required under this Contract Specifications Section. All costs in connection with the work specified herein will be considered to be included with the related items of work in the Bid Schedule of the Bid Form, or incidental to the Work.

1.03 GENERAL

- A. Definitions: The following definitions, in addition to definitions included in General Conditions Article GC1.3, apply to this Contract.
 - 1. Activity: A task, event or other Contract element on a schedule that contributes to completing the Contract. An Activity has a description, start date, finish date, duration, and is linked to one or more other Activities.
 - 2. Actual Dates: The actual start or finish date of an Activity.
 - 3. Bar Chart (Gantt Chart): A graphic display of schedule-related information in which activities or other Contract elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.
 - 4. Baseline Schedule: The first Critical Path schedule submitted by the Contractor and approved by the Engineer. The Baseline Schedule must include the scope of

all Work and show Contract Milestones, including the Contractor's Scheduled Completion Date, any Float, and the Contract Completion Date.

5. Contract Completion Date: The contractual date for completion of the Contract, calculated based on Notice-to-Proceed and the Contract duration Indicated or revised Contract duration based on any District-approved Change Orders authorizing additional time.
6. Contract Schedule: The Baseline Schedule as modified by any subsequent, approved schedules including subsequent approved Revisions, Progress Schedules or Recovery Schedules. Approved shall mean approval by the Engineer.
7. Critical Path Operation: Refer to General Conditions Article GC1.3, for definition.
8. Critical Path: Refer to General Conditions Article GC1.3, for definition.
9. Critical Path Method (CPM): A network-based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire Contract.
10. Data Date: The date in the Contract Schedule that gives current status of activities as of this date. Everything occurring on or after the Data Date is planned.
11. Early Completion Date: A Scheduled Completion Date that is earlier than the Contract Completion Date.
12. Float: The amount of time that any activity or chain of activities can be delayed before extending the Contract Completion Date.
13. Lag: A scheduling tool that allows for inserting or removal of time between two linked activities in a manner that impacts the successor activity's forecasted start or completion dates. Negative Lag occurs where the start time for an activity overlaps with and is earlier than the finish time of the preceding activity. Positive Lag occurs where Day(s) for which no work is scheduled elapse between the start time of one activity and the finish time of the preceding activity.
14. Milestone: A marker in a network which is typically used to mark a point in time or denote the beginning or end of a sequence of activities in the Contract Schedule. A Milestone has zero duration, but will otherwise function in the network as if it were an activity. Milestones must include but are not limited to any activities described as Milestones in Contract Specifications Section 01 11 00, Summary of Work.
15. Narrative Report: A document submitted with each schedule that discusses, in narrative form, topics related to Contract progress and scheduling. The Narrative Report must identify any changes made in the attached schedule submittal.
16. Out-of-Sequence Activity: Any Activity that actually starts in a sequence other than shown in the current schedule approved by the Engineer.

17. Progress Schedule: An updated Contract Schedule submitted by the Contractor on a monthly basis subject to approval by the Engineer that incorporates monthly as-built progress and any planned changes.
 18. Progress Status Report: The Narrative Report submitted with a Progress Schedule that also summarizes activities and work completed during the past month.
 19. Recovery Schedule: A Revision to the Contract Schedule prepared by the Contractor for the Engineer's review and approval to show how delays can be recovered so that the Contract Completion Date or any specified Milestone is met.
 20. Revision: A change to the Contract Schedule either initiated by the Contractor or requested by the Engineer that modifies logic, adds or deletes activities, or alters activities, sequence or durations.
 21. Scheduled Completion Date: The planned date of completion of the Work shown on the latest Progress Schedule.
 22. Site Specific Work Plan ("SSWP"): A detailed Work Plan for items within or near the BART Operating Envelope, substations, or gap breakers. This document is prepared by the Contractor and approved by the District.
 23. Time Impact Evaluation ("TIE"): A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the Contract Completion Date or for a Milestone for which liquidated damage are specified.
- B. The Contractor's Contract scheduler must have a minimum of five (5) years of experience on construction projects of the size and scope similar to or larger than the Contract. Within seven (7) Days of the issuance of the NTP, the Contractor shall submit for the Engineer's approval the resume of its proposed Contract scheduler. If the approved Contract scheduler stops working under the Contract or assumes responsibilities other than scheduling, the Contractor shall immediately notify the Engineer and submit, for the Engineer's approval, the resume of the intended replacement Contract scheduler.
- C. The Contract Schedule and any subsequent modifications shall represent a practical plan to complete the Work by the Contract Completion Date and shall convey the Contractor's intent in the manner of prosecution and progress of the Work.
- D. The scheduling and execution of construction in accordance with the Contract Documents are the responsibility of the Contractor. The Contractor shall involve and coordinate with all Subcontractors and material Suppliers in the development and updating of any Contract Schedule that may affect a Subcontractor or Supplier.
- E. The Contract Schedules submitted by the Contractor shall be understood to be the Contractor's representation that the Contract Schedules meet the requirements of the Contract Documents and that the Work will be executed in the sequence and duration indicated in the Contract Schedules.

- F. All Contract Schedules prepared by the Contractor shall meet the requirements for access, sequencing, construction staging, delivery of District-furnished materials, Contract constraints, Contract Milestone and Completion Dates as specified in the Contract Documents.
- G. The Contract Schedule shall be the basis for evaluating Contract progress and time extension requests. Responsibility for developing the Contract Schedules and monitoring actual progress rests with the Contractor.
- H. Inaccuracy in the Contract Schedule or failure of the schedule to include any element of the Work shall not relieve the Contractor from responsibility for accomplishing the Work in accordance with the Contract requirements. It is the Contractor's responsibility to prepare and submit accurate and realistic Contract Schedules for the duration of the Contract. The Engineer will rely on the Contract Schedules for planning purposes. The Contractor shall be responsible for any inaccurate information or flaws in logic shown in the Contract Schedule that may lead to inaccurate time extension analyses or conclusions.

1.04 SCHEDULING FORMAT

- A. All Contract Schedule submittals shall be computer produced in the Critical Path Method (CPM) format, utilizing project scheduling software such as Primavera and Microsoft Project or other equivalent software as approved by the Engineer.
- B. Per requirements of General Conditions Article GC8.0, the Contractor shall submit, every month, a Progress Schedule as indicated in Article 1.05, Submittals, herein.
- C. All Contract Schedule submittals shall be subject to the Engineer's approval.
- D. All Contract Schedule submittals shall show Contract tasks, duration of tasks, percent complete, progress bars, Milestones, start and finish dates, and other breakdowns as required by the Engineer.
- E. All Activities shall be identified by the work area in which the Activity occurs. The work area of each Activity shall be identified by work area code.
- F. The Contract Schedules shall clearly show the sequence of activities and shall list specifically the following activities:
 - 1. Milestone completion dates. Phasing and staging of the Work in accordance with the Work Plan shall be prominently identified.
 - 2. Submittals and the Engineer's review of submittals.
 - 3. Acquisition of permits.
 - 4. Major procurement activities and all long lead time items (long lead items shall mean any item that takes over sixty (60) Days for delivery).
 - 5. Work to be performed by other contractors or agencies.

- G. Descriptions of scheduled Activities in the Contract Schedule shall include sufficient detail to identify the work that is to be accomplished. Such detail shall include the following:
1. Sufficient Activities to clearly show the sequence and interdependencies of the work. A schedule submittal shall be prepared in such a way that an Activity or group of Activities will correspond directly with Bid Item breakdowns and/or the breakdown of lump sum Bid Items. The Engineer may request that additional Activities be added.
 2. Activity durations shall be expressed in whole Days. Work that is to be performed by Subcontractors shall be clearly defined. The duration of field Activities shall not exceed 10 Working Days.
 3. Float suppression techniques, such as preferential sequencing (crew movement, equipment use, and form reuse), extended duration, imposed dates, scheduling of work not required for the Contract, and others, shall not be used to affect or limit Float in the schedule. The use of constraint dates should be minimized, and must be approved by the Engineer.
 4. All Activities, with the exception of the first and last activities, shall a minimum of one predecessor and a minimum of one successor.
 5. Dependencies or relationships between Activities shall be shown.
 6. Punchlist tasks and time for testing shall be included prior to Substantial Completion.
 7. The interface with the work of other contractors and agencies such as, but not limited to, utility companies, shall be indicated.
 8. The Contract Schedule submittals shall be accompanied by a list of anticipated non-work days and holidays but shall exclude weekends from this list.
 9. The Contract Schedules shall include Activities for the District's review of any SSWP, submittals, access notice, and Maintenance Support Schedule (MSS).
 10. The Activity calendars shall show the working hours for each calendar.
 11. The Contract Schedules shall clearly show the non-revenue hours work Activities.
 12. The Contract Schedules shall incorporate the anticipated non-work weather days per General Conditions Article GC8.5.1.4.
- H. A Contract Schedule submittal showing that Work is completed in less than the completion time specified in the Contract may be found to be impractical by the Engineer.
- I. A Contract Schedule showing that Work is completed prior to the Contract Completion Date and that is found to be practical by the Engineer shall be

considered to have Float. Floats shall be a resource available to both parties as the need for the use of the Float arises.

- J. Any Contract Schedule submittal showing a completion date earlier than the Contract Completion Date shall show the time between the Scheduled Completion Date and the Contract Completion Date as Float.
- K. The term "Delay" shall mean failure to meet the Contract Completion Date or any dates specified in Contract Specifications Section 01 11 00, Article 1.06, Liquidated Damages. Failure to meet the Scheduled Completion Date shall not entitle the Contractor to compensable Delay damages, if the Contract Completion date is met. Per Supplementary Conditions Article SC8.0, the District shall not be responsible for any damages related to the use of Float to a failure to meet an early Completion date, including extended overhead costs or early completion delay damages.
- L. The use of negative lag is not allowed. Positive lag may be allowed subject to approval by the Engineer.
- M. A Contract Schedule found to be impractical by the Engineer for insufficient detail or for any other reason shall be revised by the Contractor and resubmitted for review and approval.

1.05 SUBMITTALS

- A. The PDF version of any Contract Schedule submittal shall be submitted in time-scaled Bar-Chart (Gantt) format with logic lines shown on sheets no smaller than 22 inches wide by 34 inches long and no larger than 34 inches wide by 44 inches long. Submittals shall include a time-scaled logic diagram. An activity report in a tabular form showing the following information shall be submitted with the Bar-Chart: activity ID, description, duration, Float, early start, early finish, late start, late finish, predecessors, successors, constraints, percent complete, and remaining duration. All generated reports shall be consistent with the submitted electronic scheduling file of the same schedule.
- B. All Contract Schedule submittals shall include one (1) electronic scheduling file of the database (Primavera), and five (5) full-size PDF copies of the schedule submittal.
- C. The Contractor shall submit the Baseline Schedule within thirty (30) Days after the date of the Notice to Proceed.
- D. The first of each type of schedule and the first monthly Progress Schedule and Narrative Report submitted by the Contractor will be reviewed for format, as well as content. The Engineer may request format changes. Once the format has been approved, all subsequent schedules, Progress Schedules, Progress Status Reports submitted by the Contractor shall be submitted in the approved format.
- E. All Contract Schedule submittals are subject to the Engineer's review and approval; the Contractor shall update and revise as indicated in Article 1.08, Review, Updates, and Revisions, herein. Resubmittals shall conform to the same requirements as original submittals.

- F. A Narrative Report shall be submitted by the Contractor with the Baseline Schedule. This narrative shall describe the basis, assumptions, planned sequence of work operations, production rates, equipment, resources, constraints, etc. used to develop the Baseline Schedule. Upon request by the Engineer, Contractor shall provide a written statement signed by all Subcontractors showing acceptance of the Baseline Schedule and any portions of said schedule affecting the Subcontractor.
- G. All Progress Schedule submittals shall include a Progress Status Report. The Report shall include the following:
 - 1. Identification of unusual restrictions or conditions occurring or discovered during the month and regarding labor, equipment or material; including multiple shifts, six-day work weeks, specified overtime or work at times other than regular Days or hours.
 - 2. Description of the current Critical Path.
 - 3. Current and anticipated delays including cause of delay; impact of delay on other activities, Milestones, and other completion dates; and corrective action and schedule adjustments to correct the delay.
 - 4. Any proposed or approved corrective action and schedule adjustments to correct the delays, if any.
 - 5. Work completed during the update period.
 - 6. List and explanation of schedule logic changes from last schedule submittal.
- H. Progress Schedule submittals shall show an accurate history of the submittals and re-submittals process as well as the District review period for each submittal and re-submittal. Actual submittal numbers shall be included in the submittal activities.

1.06 GANTT CHARTS

- A. The Contractor shall include Gantt charts with each submittal including the following:
 - 1. One (1) originally plotted, time-scaled Gantt chart.
 - 2. One (1) copy of a Narrative Report or Progress Status Report
 - 3. One (1) CD containing the schedule data.
- B. The time-scaled Gantt charts shall conform to the following:
 - 1. Show a continuous flow of information from left to right.
 - 2. Be based on early start and early finish dates of activities.
 - 3. Clearly show Critical Paths using graphical presentation.
 - 4. Be prepared on D-size sheets (24 inches by 34 inches).

5. Include a title block and a timeline on each page.

1.07 FOUR-WEEK WORK PLAN

- A. A schedule in calendar time-scaled bar chart format depicting the Contractor's intended work activities for the upcoming three-week period shall be submitted on a weekly basis and shall be due on the first Working Day of each week. Each activity of one (1) Day or more in duration shall be indicated. This Four-Week Work Plan shall also show the previous week's activities, leading into the upcoming three-week period.
- B. The first Four-Week Work Plan shall be submitted one week ahead of any physical Work at the Jobsite.
- C. The Four-Week Work Plan shall be a detailed break-down and update of activities of the Contract Schedule. Every task in the Four-Week Work Plan shall show the corresponding Activity ID number in the latest submitted Contract Schedule as well as the Subcontractor's or supplier's name performing the work.
- D. The Four-Week Work Plan shall identify activities to be performed outside of the normal work shift for the Engineer to schedule inspection resources
- E. Any deviations, such as sequences of work, timing, and durations of activities from the approved Contract Schedule, shall be noted and explained in writing.
- F. The Engineer's comments on the Four-Week Work Plan with which the Contractor disagrees shall be resolved in a meeting held for that purpose, if necessary.
- G. The Four-Week Work Plan shall be submitted on sheets not less than 8-1/2 inches by 11 inches, or as approved by the Engineer.

1.08 REVIEW, UPDATES, AND REVISIONS

- A. The Engineer will review and return the following Contractor's Contract Schedule submittals with written comments according to the schedule below. Review periods shall begin to run from the date of BART's receipt of a complete submittal.

Baseline Schedule: Twenty (20) Days

Progress Schedule, Revisions and Recovery Schedule: Fourteen (14) Days

- B. The Contractor shall make all corrections to a Contract Schedule submittal as requested by the Engineer and resubmit the schedule for approval. If the Contractor does not agree with the Engineer's comments, the Contractor shall provide written notice of disagreement within five (5) Days from the receipt of the Engineer's comments. In case of disagreement on schedule logic changes, parties shall meet within five (5) Days to discuss proposed changes. The Engineer's direction with respect to logic change shall be noted in all the subsequent Progress Status Reports if no agreement is reached. Failure to agree to schedule corrections diminishes the

reliability of the Progress Schedules and any subsequent TIE that relies on the disagreed logic and dates.

- C. At least once each month, or as often as deemed necessary by the Engineer, the Contractor shall submit an updated Progress Schedule showing the progress of the Work to date and anticipated activities to be worked on. The submittal of the updated Progress Schedule and Monthly Progress Status Report shall be at least five (5) Days prior to the submittal of a payment invoice.
- D. The Engineer reserves the right to withhold progress payments or a portion thereof until a current Contract Schedule has been approved by the District.
- E. The numbering of the Activities in the Progress or Recovery Schedules shall be the same as in the accepted Baseline Schedule. Numbers of deleted Activities shall not be used on any subsequent Progress or Recovery Schedules. New numbers shall be used for new Activities.

1.09 RECOVERY SCHEDULE

- A. If, according to the Progress Schedule, the Contractor is thirty (30) or more Days behind the Contract Completion Date or for a Milestone for which liquidated damages are specified, including all approved time extensions, the Contractor shall submit a Recovery Schedule.
- B. Within seven (7) Days after request by the Engineer, the Contractor shall submit a proposed schedule, showing the Contractor's proposed revisions to recover the lost time. As part of this submittal, the Contractor shall provide a written Narrative Report which shall discuss each proposed revision made to recover the lost time.
- C. The Narrative Report shall explain the Contractor's proposed methodology, basis, and assumptions made in the recovery of lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work. The Recovery Schedule shall be prepared as a modification to the current Progress Schedule that incorporates proposed revisions to recover the lost time.
- D. The proposed changes in a Recovery Schedule shall not be incorporated into any updated Progress Schedule until they have been approved by the Engineer. Once proposed revisions are approved by an Engineer, the Contractor shall include the approved revisions into the next monthly Progress Schedule submittal.
- E. Upon request by the Engineer, the Contractor shall provide written statements signed by affected Subcontractors showing approval of the Recovery Schedule and portions of the schedule affecting the Subcontractor.

1.10 TIME IMPACT EVALUATION

- A. When the Contractor becomes aware of circumstances including Change Notices, Force Account directives, or other District-caused delays, the Contractor shall prepare and submit a Time Impact Evaluation ("TIE") within fifteen (15) Days of the

event, which includes both a written narrative and a schedule diagram depicting how the changed work affects other schedule activities. The Contractor's failure to provide the TIE within the time specified shall be considered as a complete bar to the Contractor's attempt to file any claims or time extension request associated with the said issue.

- B. TIE shall be based on an approved Baseline or Progress Schedule that has a Data Date closest to and before the occurrence of the event. The TIE shall incorporate District's previous unaddressed or pending schedule review comments. The TIE shall show actual logic for the completed portion of the schedule as performed and verified in the field. If the approved Baseline or Progress Schedule used for TIE does not show accurate as-built or remaining incomplete Activity logic and duration, then the TIE schedule shall be revised to show the most accurate logic and sequence at the time the TIE is submitted.
- C. The schedule diagram shall show how the Contractor proposes to incorporate the changed work in the Contract Schedule and how it impacts the Critical Path of the Contract Schedule. The Contractor is also responsible for requesting time extensions based on the TIE's impact on the Critical Path.
- D. The diagram must be tied to the main sequence of schedule activities to enable the Engineer to evaluate the impact of the changed work to the Critical Path. Until approved by the Engineer, the TIE activities shall not be incorporated into monthly Progress Schedule submittals.
- E. If the parties cannot agree on the time extension as depicted in the TIE, the Contractor is required to submit a revised TIE at the conclusion of the delay period, incorporating as-built dates in the revised TIE. The revised TIE also needs to incorporate the latest schedule logic revisions that were made after the submittal of the initial TIE as well as the impact of any and all concurrent delays, consistent with requirements of General Conditions Article GC8.0 and other relevant sections.

1.11 REQUESTS FOR TIME EXTENSIONS

- A. If the Contractor requests an extension of time for the Contract Completion Date or for a Milestone for which liquidated damages are specified, the Contractor shall furnish necessary justification for such extension so that the Engineer can determine whether or not the Contractor is entitled to an extension of time under the provisions of the Contract. Submission of proof based on revised activities logic, and duration, is obligatory to any approvals. The cost of such justification or subsequent schedule revisions shall be borne solely by the Contractor.
 - 1. The time extension evaluation shall fully comply with requirements of General Conditions Article GC8.0 and other relevant sections and clearly display that the Contractor has used, in full, the entire Float available for the work involved in its request.
 - 2. The Engineer's determination as to the total number of Days for extension of the Contract Completion Date will be based upon the Contract Schedule, General Conditions Article GC8.0 and all other relevant information. Actual delays in Activities that, according to the schedule, do not affect the Contract Completion

Date as shown by the Critical Path, will not be the basis for a change to the Contract Completion Date.

3. After receipt of such justification and supporting evidence, the Engineer will review the facts and advise the Contractor of the Engineer's decision. Any change to a Milestone, for which liquidated damages are specified, or to the Contract Completion Date will be made by Change Order.
4. In addition to TIE, any Contractor's request for compensation for schedule Delays shall include a but-for analysis that incorporates a complete concurrent delay analysis as required by General Conditions Article GC8.0. Since the TIE is based on Progress Schedules that may not depict the correct dates or logics of incomplete Activities, such but-for analysis may require analysis of as-built information at a later date so that the impact of the actual as-built dates and logic ties are used.

PART 2 –PRODUCTS

Not Used

PART 3 –EXECUTION

Not Used

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